

when the whole work can be completed. Another advantage is that if changes or corrections are necessary or new species described the new pages can be inserted in their proper places. The temporary indices of the first three volumes are to be discarded now, that of the present volume replacing them. Degener has been in the islands since 1922, has travelled extensively in all the large islands and employs several collectors to help him in the work. Many of his specimens have been deposited in the herbarium of the New York Botanical Garden.

Desert Wild Flowers

Desert Wild Flowers. Edmund C. Jaeger. Stanford University Press. XII + 322 pages. 1940. \$3.50.

GEORGE T. HASTINGS

To many of us the word "desert" originally suggested a barren sandy waste, possibly the Sahara as pictured in our elementary geographies, where nothing could grow, except in the rare oases. Though we have outgrown these early ideas and know that many plants are adapted to live in the desert, it may come as a surprise to find 764 species described from the deserts of California. Quite as much of a surprise, possibly, to know that cacti "are abundant only in places where water supplies are seasonally plentiful" and cannot grow at all in the driest parts of the desert.

Edmund Jaeger is an authority on the biology of the California deserts; his *The California Deserts* published seven years ago was followed by *Denizens of the Desert*—now these are supplemented by *Desert Wild Flowers*. Like the former volumes, this is a popular work for those visitors to and residents of southern California interested in knowing the plants they see. There are no keys nor scientific descriptions, instead there are outline drawings of practically all the plants, mostly made from living material in the field during the twenty-five years that the author has been exploring the Mohave and Colorado Deserts. He suggests that users of the book carry indelible colored pencils to color the illustrations of the plants they find. In addition to the drawings there are photographs of some of the trees and shrubs and of the cacti. Incidentally, these photographs give a fair idea of several types of desert country. Naturally where there are closely related species in a genus, determination by drawings alone may be uncertain. In these cases the

brief descriptions will help. Instead of technical descriptions there are interesting notes on the biology and ecology of the species, their use by the Indians, their relation to birds, insects and other desert animals. The meanings of the scientific names are given and the English or common names are given, or, in the majority of cases, as the plants have no common name, one is supplied, often an English form or translation of the scientific one. To the reviewer this seems unnecessary. Anyone who can distinguish between the species can learn the scientific name as easily as the manufactured "common" one.

As an example of the treatment of species we select one of the fourteen species of Saltbush, *Atriplex Torreyi* (Gr. "not" + "to nourish"—because it robs the soil, also the Latin name for "oracle"; John Torrey). "Principally a Nevada species extending southeast to the Mohave Desert of California and east to southwestern Utah. The gray-scurfy branches and sharply angled twigs make up large, almost impenetrable bushes 3-6 ft. tall. . . . Dr. John Torrey, a New York botanist, specialist in mosses, in whose honor Sereno Watson named this plant, was the describer of many of the species collected by Frémont in western deserts. He visited California in 1865, collecting in the region about Santa Barbara and in the Sierra Nevada." In the same way biographical notes are given for 150 others whose names are commemorated in genus or species names.

The scientific names used (without citation of authority or synonyms) are "for the most part those used by Munz in his Manual of Southern California Botany," which means that Dr. Jaeger is conservative in his ideas as to genera and species.

The volume is attractive and admirably adapted to its purpose of a popular handbook of desert plants. The professional botanist will find it a desirable supplement to the standard manuals with much of interest about the plants omitted from these more technical works.

What Are the Vitamins?

What Are the Vitamins? Eddy, Walter H., Reinhold Publishing Corporation. 1941. 247 p. \$2.50.

WM. J. BONISTEEL

Thirty years ago Funk discovered a crystalline substance in extracts from rice polishings and the story of vitamins was launched.